PRELIMINARY NOTES ON THE HOST RANGE AND HABITS OF A MYRMELEONTID ANTLION LARVA FOUND ON THE ISLAND OF HAWAI'I (NEUROPTERA: MYRMELEONTIDAE)

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Antlions, or "doodlebugs" as they are commonly known in the continental United States, have a fairly wide distribution and are known from Australia, New Zealand, Tahiti, Fiji, Hawai'i, Asia, Europe, and South America.

Adult myrmeleontids superficially resemble dragonflies and damsel flies because of their long slender wings and bodies. They usually fly at dusk but may be taken on the wing on dull cloudy days. In Hawaii Volcanoes National Park (HAVO) they have been observed in broad daylight at Halapē, Nāulu, Hilina Pali, and the Footprints Trail. The altitudinal distribution for Hawai'i Island ranges from sea level to 1830 m elevation.

Australia has 36 genera and 95 species, and New Zealand two species.

The Hawaiian forms appear to be derivatives from the widespread Eidoleon bistrigatus (Rambur) which ranges widely from Australia to Tahiti and neighboring islands. Zimmerman (1957: 158) tentatively places two species and one subspecies in our fauna, as follows: Eidoleon perjurus perjurus (Walker) from O'ahu, Maui, and Lāna'i; E. perjurus subsp. violentus (Walker) from O'ahu and Moloka'i; and E. wilsoni (Walker) from Lāna'i, Kaho'olawe, and Hawai'i.

Antlion adults recently found on the island of Kaho'olawe turned out to be a second species for that island's fauna.

Prior to October 1976 no antlion larvae were ever recorded from Hawai'i Island; therefore, nothing was known about their larval characteristics, occurrence, and host range. However, there is a record by Perkins (1913: CLXXiii) of a solitary larva found beneath a stone on the edge of the stream in Iao Valley, Maui, which he suspected belonged to the Maui species, E. perjurus perjurus (= Formicaleo perjurus (Walker) McLachlan). Zimmerman (1957) suggests that Perkins' note on the supposed larva be accepted with caution because such a habit would be most unusual, if true.

The antlion larva has been described in the literature as a small insect approximately one-third inch long, with six weak legs and a small head with two sickle-like jaws extending forward. Judging from the New Zealand, American, and European illustrated literature as well as actual Hawai'i Island specimens, I would add that the abdomen is quite rotund.

Myrmeleontidae is derived from a Greek meaning antlion, which refers to the larval habit of preying upon ants that tumble into antlion-constructed pits. The antlion's diet is not restricted to ants, however, and not all species construct pits. Since the native Hawaiian antlion does not distinguish native from exotic prey, the lack of native ants apparently has not posed a problem for the local antlion.

In October 1976 Mr. Harry McKee of Ocean View Estates, Ka'ū, Hawai'i, found an antlion larva on the screen of his greenhouse. This was followed by a second specimen in the same site. Both were received by the author in a dead condition and were the first native antlions to be recorded from Hawai'i Island (Davis 1980: 163).

On 28 January 1980, Harry McKee found a third myrmeleontid larva on his greenhouse screen which I received in excellent condition. Harry Jr., as he has been named, was playing "possum" at the time of transfer to a petri dish, a trait common to many species of antlions.

Harry Jr. is now in his 130th day of captivity and has grown from 10 mm to 13 mm in length and from 4 mm to 6 mm in width.

During the course of his captivity the antlion has consumed 25 caterpillars ranging from 11 mm to 21 mm in length. This diet included undetermined cutworm species, Mexican leafrollers, green garden loopers, imported cabbage worms, and a sawfly larva (Table 1). While these caterpillars may not necessarily reflect the natural prey of our antlion, hopefully, this information will be obtained in due course.

Harry Jr. is being held in a plastic 20-dram vial to which 3/4-inch of olivine sand was added. When placed in the vial Harry lowers himself by curving the tip of the abdomen into the sand to act as a pivot point, then with the aid of the first and second pair of legs usually rotates clockwise. This procedure differs a little from some accounts in foreign and American literature. In the process a shallow pit is formed and only the sickle-like jaws, the head, and thorax may be seen.

As an introduced caterpillar approaches, the sickle-like jaws grasp the caterpillar in a lightning thrust. A powerful toxin is injected by the jaws and within minutes, depending upon the size of the prey, the victim ceases to struggle. The ingestion of body fluids by the antlion is believed to be the same as reported by Miller (1971) and others. The host fluids are sucked into the mouth through a "tube" formed by a groove on the inner side of each toothed jaw and closed by the attenuated accessory jaw.

The duration of feeding varies and may take between two to six hours or more. When completed only a shriveled carcass remains. Caterpillars are readily accepted day or night.

As in other species of antlions, the native Hawai'i species has an incomplete intestinal canal and voids no excrement during its larval development.

The life cycle of the antlion is, in general, much longer than most insects, owing to the intermittent nature of its food supply. Under our conditions, this may be two years or more.

While the Hawai'i Island larval antlion is presumed to be E. wilsoni, it could also turn out to be a neighboring island species. Therefore, in the absence of comparative larval specimens, specific identification will not be possible until the remaining larval and pupal stages are completed and the adult emerges.

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ADDENDUM

The antlion died from unknown causes after 162 days in captivity.

TABLE 1. Host range of the larval antlion, *Eidoleon wilsoni* (Walker).

ORDER Family	Scientific Name	Common Name	No. Eaten*
HYMENOPTERA			
Tenthredinidae	*Cladius difformis* Panzer	Bristly roseslug	1
LEPIDOPTERA			
Noctuidae	*Chrysodeixis chalcites* (Esper)	Green garden looper	15
	Peridroma saucia (Hubner)?	Variegated cutworm	2
Pieridae	*Pieris rapae* (Linnaeus)	Imported cabbageworm	4
Tortricidae	*Amorbia emigratella* (Busch)	Mexican leafroller	3

* Size range = 11 mm - 21 mm.